Special Note.—National Defense Purchases

IN recent quarters, spending for national defense, in contrast to other types of government spending, has been on an uptrend as a result of the administration's policy of 8.7 percent average annual growth in real defense outlays over fiscal years 1981–84. This uptrend has heightened interest in the several series that can be used to track defense spending. One such series is the national defense *purchases* series, a subcomponent of Federal Government purchases of goods and services in the national income and product accounts (NIPA's). This series consists of the compensation of military and civilian employees, purchases of goods and services from business and abroad, and net purchases of used goods. Another NIPA series is defense *expenditures,* which consists of, in addition to purchases, small amounts for grants-in-aid to State and local governments and for subsidies less the current surplus of government enterprises. The expenditures series is broken down into the functional subcategories of military activities, civil defense, foreign military assistance, and other expenditures (see annual NIPA table 3.16). A more comprehensive series is *outlays*—the unified budget series in terms of which the administration's policy is expressed. It consists of, in addition to expenditures, military retirement pay, loans, and net interest paid. A further distinction between purchases and outlays is that outlays are on a checks-issued basis, and purchases are on a delivery basis. (For a reconciliation of outlays and purchases, see table 10, page 28, of the March 1982 SURVEY OF CURRENT BUSINESS.)

The national defense purchases series will be the focus of this Special Note. Within the NIPA's, national defense purchases are a subcomponent of GNP and, as just noted, a subcomponent of expenditures in presentations of government receipts and expenditures. These purchases, which are made largely by the Department of Defense (DOD), are shown in the usual four-fold NIPA major-type-of-product categories: durable goods (those with a normal life expectancy of 1 year or more), largely consisting of military equipment, such as aircraft and ships; nondurable goods, largely bulk petroleum products and ammunition; services, largely compensation of employees; and structures, largely military facilities. Substantial detail by type of purchase—for current dollars, constant dollars, and associated implicit price deflators—is shown annually beginning with 1972 in NIPA tables 3.9, 3.10, and 7.15. Quarterly estimates, at a summary level of detail, are in NIPA tables 3.7B, 3.8B, and 7.14B. Quarterly estimates for 1977–82, at an intermediate level of detail, are introduced later in this issue of the SURVEY, along with percent changes in a new fixed-weighted price index.

Sources and methods.—A basic source of information for current-dollar estimates is the *Monthly Treasury Statement of Receipts and Outlays of the United States Government* (MTS). As shown in the reconciliation table mentioned earlier, purchases are derived from defense outlays in the MTS by subtracting outlays for transfer payments to retired military personnel, grants-in-aid, net interest paid, and other outlays, such as for loans. A timing adjustment is also made to adjust outlays from a checks-issued basis to a delivery basis. The timing adjustment is derived from DOD reported deliveries of major weapons systems. This procedure provides a control total for national defense purchases. Detail for purchases by type of good or service is obtained from a variety of DOD reports.

Constant-dollar estimates are prepared by the standard NIPA procedure for final goods and services: At the finest possible level of product detail, divide current-dollar estimates by appropriate price indexes, and sum the results to the published level of detail. For defense purchases, implementation of this procedure is especially difficult because much of defense spending is for unique products that change radically and are otherwise difficult to price. Further, until recent years, information was not available on product breakdowns or on prices paid by Government, which may move very differently from prices paid by the private sector.

A project to remedy the inadequacy of product and price information was started in the mid-1970's by BEA in cooperation with DOD. It involved the development of price series at a very detailed level, along with parallel development of product detail, using data largely from DOD records. The technique used to obtain the price series was specification pricing: Price-determining characteristics of an item are defined, and these are then held constant for successive pricings of the item. For example, in the case of combat boots, the type and quality of sole and upper material—rather than size and color—are price-determining characteristics. For each period, the price of an item with these characteristics is divided by its price in the base year; the result is the price index needed to divide into current-dollar purchases. For many reasons, it may not be possible to price successively an item with the given specifications, and in this case the price is adjusted for the cost of a change in specification. The price adjustment for the specification change is obtained by assuming that the production cost associated with the change is the appropriate measure. In the example of combat boots, if a change in the sole material from leather to rubber lengthens the life of the boot, the difference in the cost of the leather and rubber sole is taken as the price of the specification change. Price series for a sample of products in each of about 100 categories were prepared in this way. The categories

Table A.—National Defense Purchases of Goods and Services

	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982*
	Billions of 1972 dollars										
National defense purchases	73.1	68.3	66.9	66.4	64.9	65.4	65.7	67.4	70.1	73.5	78.9
Compensation	35.7	33.6	33.3	32.9	32.3	32.0	32.2	32.6	32.2	32.8	33.8
All other	37.5	34.6	33.6	33.5	32.6	33.4	33.5	35.4	37.9	40.7	45.6
	Percent change from preceding period										
National defense purchases (Billions of 1972 dollars)		−6.6	−2.0	−.8	−2.3	.8	.5	2.6	4.0	4.9	7.3
Compensation		−5.7	−1.5	−1.3	−1.8	−.9	.6	−.6	.6	1.9	1.5
All other		−7.7	−2.9	−.3	−2.7	2.5	.3	5.7	7.1	7.4	12.0
National defense purchases (Index, 1972=100)											
Implicit price deflator		6.6	8.0	8.5	6.0	7.1	7.6	8.7	12.3	11.5	8.4
Fixed-weighted price index		6.9	10.0	8.6	6.0	7.3	7.5	9.7	14.6	11.8	8.6

* Projection.

ranged from aircraft to depot maintenance services to compensation of employees. (For the latter, the price-determining characteristics were education and training.)[1]

As a result of this project, estimates of constant-dollar defense purchases and implicit price deflators—the result of dividing a current-dollar estimate by a constant-dollar estimate—were first introduced into the NIPA's in 1980 for the period beginning in 1972. Further, the current-dollar estimates, by type, were improved, because of the work on product detail.

Real purchases and prices, 1972-82.—National defense purchases, measured in 1972 dollars, declined from $73 billion in 1972 to $65 billion in 1976 (table A). Following this period of continued winding down of U.S. operations in Vietnam, they increased moderately in 1977–78 before they began to accelerate in 1979. They are estimated to be $79 billion in 1982. In 1972, compensation was roughly one-half of total defense purchases, and in 1982 it was only 42 percent. Although compensation had declined less than the "all other" component in the early part of the decade, it increased much less later. In 1982, it was still below its level of a decade earlier, largely because the size of the armed forces was down about 300,000. "All other" purchases declined at annual rates that averaged 3½ percent from 1972 to 1976. Thereafter, with one exception, each year's increase was larger than in the preceding year; the 1982 increase was about 12 percent.

The acceleration in 1979 was a reflection of a policy to strengthen NATO forces in Europe, to strengthen strategic forces, and to increase the overall combat readiness of U.S. forces. Further acceleration in mid-1982 was a reflection of the administration's policy to increase defense spending substantially over the next few years. This acceleration was not due to the introduction of new major weapons systems, but to a higher rate of spending for all defense activities, particularly for weapons systems currently in production, such as the F-16 and F-18 fighter aircraft. All types of purchases other than compensation contributed to the acceleration. In durables, although purchases of aircraft slowed, purchases of missiles and ships were stepped up. In nondurables, the acceleration was widespread, and in services, it was concentrated in research and development and in maintenance.

Throughout the 1979–82 period, the pattern of quarterly changes often appeared erratic. However, the pattern can be traced largely to the changes in the deliveries of aircraft, missiles, and vehicles, and in the purchases of services other than compensation. Deliveries may change abruptly for several reasons: (1) the introduction of a new weapons system, as in mid-1980 when initial deliveries of the F-18 were small and larger deliveries of the A-7—which the F-18 replaced—stopped; (2) changes in the number of aircraft or missiles to be delivered, as when scheduled deliveries of the F-14 were reduced because of budget constraints; (3) diversion of deliveries to foreign buyers, as when F-15's were diverted to Israel; and (4) production problems or bottlenecks. Fluctuations in the purchases of services other than compensation were mainly due to discretionary purchases at military installations. Large increases in these purchases early in 1980 were the result of large existing backlogs in the maintenance and repair of facilities and equipment; purchases declined as these backlogs were reduced.

Two measures of price change for national defense purchases are also shown in table A—the implicit price deflator and the fixed-weighted price index. The implicit price deflator reflects shifts in weights as well as price changes (except when the comparison of change is from the base period), whereas the fixed-weighted price index does not reflect weight shifts, but only price change. Throughout most of the 1972–82 period, annual increases in defense prices (as reflected in the fixed-weighted price index) did not differ much from those in total GNP prices. In 1980 and 1981, however, defense price increases were much higher—in the range of 11½–14½ percent, compared to 9½–10 percent for GNP. Defense prices increased more mainly because of large increases in the prices of bulk petroleum products in those years. A large—14.8 percent—military pay raise also contributed to the 1981 increase (pay raises are reflected as price increases). Like most other price increases, defense price increases show a substantial deceleration in 1982, to about 8½ percent.

Throughout most of the period, the differences between changes in the fixed-weighted price index and in the implicit price deflator were small—no

1. A detailed description of the work done appears in *Price Change of Defense Purchases of the United States*, U.S. Department of Commerce, Bureau of Economic Analysis (Washington, D.C.: U.S. GPO, 1979).

more than 0.3 percentage points. There were three exceptions, and in each year the increase in the fixed-weighted price index was larger: in 1974, by 2.0 points, in 1979, by 1.0 point, and in 1980, by 1.6 points. The major reason for these large differences was the price and weight of bulk petroleum products. In 1974, the prices of petroleum products accelerated sharply following the 1973 OPEC oil embargo. Because the weight of bulk petroleum was higher in the fixed-weighted price index than in the implicit price deflator, the fixed-weighted price index registered a larger increase. In 1979–80, prices for bulk petroleum products were continuing to increase substantially more than other defense prices on average. Because, by this time, the weight for bulk petroleum products was twice as large in the fixed-weighted index as in the implicit price deflator, it again recorded larger increases.

On a quarterly basis, significant price increases occur in the fourth quarters, when Federal pay raises are effective. Other than these large increases, price changes appear erratic. The sharp movements are partly due to inherent characteristics of prices for defense purchases. For example, when a transaction does not occur in a given quarter, the price is held unchanged at the last observed price until there is a new transaction; the new transaction's price may be significantly higher or lower. Also, the contracting procedures of DOD can cause sharp changes. Many goods and services are purchased under fixed-price contracts, which are for 1 year; their effective dates tend to be clustered at certain times of the year.